

Serial No. 10/527,036
March 10, 2006
Reply to the Office Action dated February 23, 2006
Page 2 of 7

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claims 1-3 (canceled).

Claim 4 (previously presented): A laminated coil comprising:
a laminated body;
via holes formed in a lamination direction of said laminated body;
conductors disposed on laminating surfaces of the laminated body and fixed end portions of which are connected thereto by the via holes; and
a coil wound in a direction that is substantially perpendicular to the lamination direction; wherein
the via holes are disposed in each ceramic layer constituting the laminated body and define through-holes, each being filled with a conductor material and arranged along a row in the lamination direction; and
in each of the through-holes, a difference between a diameter in an axial direction of the coil on an opening surface of one opening of the ceramic layer and a diameter in the axial direction of the coil on an opening surface of another opening is smaller than a difference between a diameter in a direction that is substantially perpendicular to the axial direction of the coil on the opening surface of said one opening of the ceramic layer and a diameter in a direction that is substantially perpendicular to the axial direction of the coil on the opening surface of said another opening.

Claim 5 (previously presented): A laminated coil as claimed in claim 4, wherein each of the through-holes has a substantially oval flat shape and a short-axis direction corresponds with the axial direction of the coil.

Serial No. 10/527,036
March 10, 2006
Reply to the Office Action dated February 23, 2006
Page 3 of 7

Claim 6 (previously presented): A laminated coil as claimed in claim 4, wherein the laminated coil defines a chip inductor.

Claim 7 (previously presented): A laminated coil as claimed in claim 4, wherein the conductors on the laminating surfaces of the laminated body are substantially belt-shaped.

Claim 8 (previously presented): A laminated coil as claimed in claim 4, wherein the conductors are defined by at least one conductor layer.

Claim 9 (previously presented): A laminated coil as claimed in claim 4, wherein the conductors are defined by at least three conductor layers.

Claim 10 (previously presented): A laminated coil as claimed in claim 4, wherein each of the through-holes has an upper opening having a substantially oval flat shape and a lower opening having a substantially round flat shape.

Claim 11 (previously presented): A laminated coil as claimed in claim 4, wherein each of the through-holes has an upper opening having a substantially oval flat shape and a lower opening having a substantially oval flat shape.

Claim 12 (previously presented): A laminated coil as claimed in claim 4, wherein each of the through-holes has a first inner portion corresponding to the axial direction of the coil having a greater angle of inclination than a second inner portion corresponding to the direction that is substantially perpendicular to both the axial direction of the coil and the lamination direction of the laminated body.

Serial No. 10/527,036

March 10, 2006

Reply to the Office Action dated February 23, 2006

Page 4 of 7

Claim13 (previously presented): A laminated coil as claimed in claim 4, wherein two coils are provided in parallel in the laminated body.

Claim 14 (previously presented): A laminated coil as claimed in claim 13, wherein the laminated coil defines one of a chip inductor, a transformer and a common mode choke coil.

Claim 15 (previously presented): A method for producing a laminated coil, comprising the steps of:

forming a plurality of ceramic green sheets;

forming conductors on surfaces of the ceramic green sheets; and

laminating the plurality of ceramic green sheets in a lamination direction to form a laminated body;

forming via holes in the ceramic green sheets such that

in each of the through-holes, a difference between a diameter in an axial direction of the coil on an opening surface of one opening of the ceramic layer and a diameter in the axial direction of the coil on an opening surface of another opening is smaller than a difference between a diameter in a direction that is substantially perpendicular to the axial direction of the coil on the opening surface of said one opening of the ceramic layer and a diameter in a direction that is substantially perpendicular to the axial direction of the coil on the opening surface of said another opening; and

after through-holes have been formed, filling the through-holes with a conductor material so as to form a coil wound in a direction that is substantially perpendicular to the lamination direction.

Claim 16 (previously presented): The method according to claim 15, wherein the through holes are formed via laser radiation.

Serial No. 10/527,036
March 10, 2006
Reply to the Office Action dated February 23, 2006
Page 5 of 7

Claim 17 (previously presented): The method according to claim 16, wherein an energy distribution of laser light is adjusted during the laser radiation such that each of the through holes has an upper opening having a substantially oval flat shape and a lower opening having a substantially round flat shape.

Claim 18 (previously presented): The method according to claim 16, wherein an energy distribution of laser light is adjusted during the laser radiation such that each of the through holes has a first inner portion corresponding to the axial direction of the coil having a greater angle of inclination than a second inner portion corresponding to the direction that is substantially perpendicular to both the axial direction of the coil and the lamination direction of the laminated body.

Claim 19 (previously presented): The method according to claim 15, wherein each of the through holes is formed such that each of the through-holes has a substantially oval flat shape and a short-axis direction corresponds with the axial direction of the coil.

Claim 20 (previously presented): The method according to claim 15, wherein each of the through holes is formed such that each of the through-holes has an upper opening having a substantially oval flat shape and a lower opening having a substantially oval flat shape.

Claim 21 (previously presented): The method according to claim 15, wherein the laminated coil defines a chip inductor.

Claim 22 (previously presented): The method according to claim 15, wherein two coils are formed in parallel in the laminated body.

Serial No. 10/527,036
March 10, 2006
Reply to the Office Action dated February 23, 2006
Page 6 of 7

Claim 23 (previously presented): The method according to claim 22, wherein the laminated coil defines one of a chip inductor, a transformer and a common mode choke coil.